

RCE Amendment and Response  
 Application Serial No. 09/889,687  
 Attorney's Docket No. 26979-0002 C1

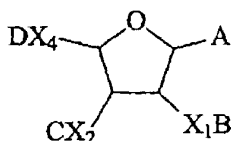
### Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

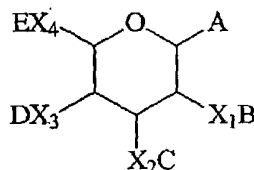
### Listing of Claims:

1-22. (Canceled)

23. (new) An orthogonally protected monosaccharide building block of Formula I or Formula II



I



II

in which

A is a leaving group selected from the group consisting of halogen, trichloroacetimidoyl, sulfoxide, -O-alkenyl; and -SR, where R is alkyl, alkenyl, alkynyl, cycloalkyl or aryl.

X<sub>1</sub>, X<sub>2</sub>, and X<sub>3</sub> are independently selected from H, O, N, or N<sub>3</sub>, with the proviso that only one of X<sub>1</sub>, X<sub>2</sub>, and X<sub>3</sub> is H, N or N<sub>3</sub> in any molecule;

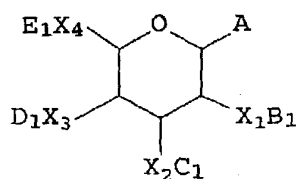
X<sub>4</sub> is -CH<sub>2</sub>O; and

B, C, D and E are different and of them B, C, or D is absent if the corresponding X<sub>1</sub> to X<sub>3</sub> is H or N<sub>3</sub>, and B, C, D and/or E are selected from protecting groups which can be cleaved orthogonally in any order, such that the cleavage conditions do not compromise the stability of the other protecting or functional groups on the monosaccharide building block, wherein the protecting groups for hydroxy protection are selected from the group consisting of acyl-type protecting groups, carbonates, *t*-butyldiphenylsilyl, triisopropylsilyl, trimethylsilylethyl, triphenylsilylethyl, trifluoromethyl, trichloromethyloxymethyl, trichloromethyloxycarbonate, ethoxyethyl, cyanoethyl, NSC (p-nitrobenzyl-sulphonylethyloxycarbonyl), p-nitrobenzyl-sulphonylethyl, naphthylmethyl, substituted naphthylmethyl, p-methoxybenzyl, 3,4-dimethoxybenzyl, 2,4,6-trimethoxybenzyl, 3,4-methylenedioxymethyl, acylamidobenzyl, azidobenzyl, p-azido-m-chlorobenzyl, allylic protecting groups, o-nitrobenzyloxycarbonate, o-

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nitrobenzyl, dinitrobenzyl, 2-oxo-1,2-diphenylethyl, methylthioethyl, acyloxybenzyl and benzylthioethyl; and for amino protection are selected from the group consisting of Dde (*N*-[1-(4,4-dimethyl-2,6-dioxocyclohex-1-ylidene)ethyl]), Wow ((1,3-dimethyl-2,4,6-(1H,3H,5H)-trioxopyrimidin-5-ylidene) methyl), tetraphthaloyl, dichlorophthaloyl, 2,5-dimethyl-pyrrolyl benzyloxycarbonyl, and pentenyl.

24. (new) A monosaccharide building block according to claim 23, which is a compound of Formula III



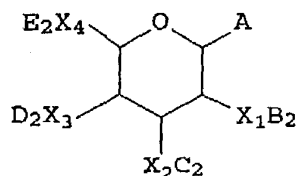
III

in which

A, X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> are as defined for Formulae I and II; and

B<sub>1</sub>, C<sub>1</sub>, D<sub>1</sub> and E<sub>1</sub> are orthogonal carbohydrate protecting groups which for hydroxy protection are selected from the group consisting of acyl-type protecting groups, carbonates, *t*-butyldiphenylsilyl, triisopropylsilyl, trimethylsilylethyl, triphenylsilylethyl, *p*-methoxybenzyl, 3,4-dimethoxybenzyl, 2,4,6-trimethoxybenzyl, 3,4-methylenedioxybenzyl, acylamidobenzyl, azidobenzyl, *p*-azido-*m*-chlorobenzyl, *o*-nitrobenzyloxycarbonate, *o*-nitrobenzyl, dinitrobenzyl and 2-oxo-1,2-diphenylethyl; and for amino protection are selected from the group consisting of Dde, Wow, tetraphthaloyl, dichlorophthaloyl, 2,5-dimethyl-pyrrolyl, benzyloxycarbonyl, and pentenyl.

25. (new) A monosaccharide building block according to claim 23, which is a compound of Formula IV



IV

in which

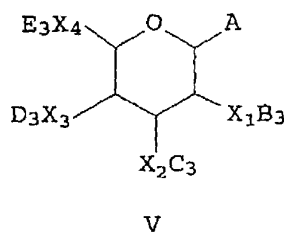
A, X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> are as defined for Formulae I and II; and

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B<sub>2</sub>, C<sub>2</sub>, D<sub>2</sub> and E<sub>2</sub> are orthogonal carbohydrate protecting groups which for hydroxy protection are selected from the group consisting of acyl-type protecting groups and carbonates, and for amino protection are selected from the group consisting of Dde, Wow, tetraphthaloyl, dichlorophthaloyl, 2,5-dimethyl-pyrrolyl, benzyloxycarbonyl, and pentenyl.

26. (new) A monosaccharide building block according to claim 25, in which the protecting groups are selected from the group consisting of levanoyl, chloroacetate, *p*-methoxybenzyloxycarbonyl and 2-trimethylsilylethylcarbonate.

27. (new) A monosaccharide building block according to claim 23, which is a compound of Formula V



in which

A, X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> are as defined for Formulae I and II; and

B<sub>3</sub>, C<sub>3</sub>, D<sub>3</sub> and E<sub>3</sub> are orthogonal carbohydrate protecting groups at least one of which is selected from the group consisting of acyl-type protecting groups, carbonates, Dde, Wow, tetraphthaloyl, dichlorophthaloyl, 2,5-dimethyl-pyrrolyl, benzyloxycarbonyl, and pentenyl; and the remainder being selected from the group consisting of *t*-butyldiphenylsilyl, triisopropylsilyl, trimethylsilylethyl, triphenylsilylethyl, trifluoromethyl, trichloromethyloxymethyl, trichloromethyloxycarbonate, ethoxyethyl, cyanoethyl, NSC (*p*-nitrobenzyl-sulphonylethyl), *p*-nitrobenzyl-sulphonylethyl, naphthylmethyl, substituted naphthylmethyl, *p*-methoxybenzyl, 3,4-dimethoxybenzyl, 2,4,6-trimethoxybenzyl, 3,4-methylenedioxybenzyl, acylamidobenzyl, azidobenzyl, *p*-azido-*m*-chlorobenzyl, allylic protecting groups, *o*-nitrobenzyloxycarbonate, *o*-nitrobenzyl, dinitrobenzyl, 2-oxo-1,2-diphenylethyl, methylthioethyl, acyloxybenzyl and benzylthioethyl.

28. (new) A method of synthesis of a molecule selected from the group consisting of glycoconjugates of non-carbohydrate molecules, neo-glycoconjugates and oligosaccharides,

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comprising the step of glycosylating the molecule with a monosaccharide building block according to claim 23.

29. (new) A method according to claim 28, in which the molecule comprises one or more compounds in which substituents are linked to a pyranose or furanose ring.
30. (new) A method according to claim 28, in which the synthesis is carried out in solution.
31. (new) A method according to claim 28, in which the synthesis is carried out on a solid-phase support.